

I claim:

- 1 1. A soft tissue coagulation device, comprising:
2 a shaft defining a distal end and including an outer structure
3 formed from material that is relatively high in thermally conductivity and
4 substantially electrically nonconductive;
5 at least one energy transmission device supported on the outer
6 structure in spaced relation to the distal end of the shaft; and
7 at least one fluid lumen defined by the outer structure and
8 located such that a portion thereof is aligned with the at least one energy
9 transmission device.
- 1 2. A device as claimed in claim 1, wherein the shaft is relatively
2 short.
- 1 3. A device as claimed in claim 1, wherein at least a portion of the
2 shaft is relatively stiff.
- 1 4. A device as claimed in claim 3, wherein the shaft includes a
2 malleable mandrel and the outer structure is mounted on the malleable
3 mandrel.
- 1 5. A device as claimed in claim 3, wherein the shaft includes a
2 tubular member defining a distal end and the outer structure extends distally
3 from the distal end of the tubular member.
- 1 6. A device as claimed in claim 1, wherein the shaft include a
2 proximal portion and a distal portion, the device further comprising:
3 a steering apparatus that deflects the distal portion relative to
4 the proximal portion.
- 1 7. A device as claimed in claim 1, wherein the shaft includes a pre-
2 bent portion.

1 8. A device as claimed in claim 1, wherein the at least one fluid
2 lumen comprises an inlet lumen and an outlet lumen.

1 9. A device as claimed in claim 8, wherein the inlet lumen and the
2 outlet lumen define respective distal ends, the device further comprising:
3 a non-conductive tip member defining a lumen that connects the
4 distal ends of the inlet lumen and outlet lumen.

1 10. A device as claimed in claim 1, wherein the at least one fluid
2 lumen includes inner and outer lumen surfaces defining a distance
3 therebetween, the outer structure includes a wall defining a wall thickness
4 between the at least one energy transmission device and the at least one fluid
5 lumen, and the distance between the inner and outer lumen surfaces is
6 greater than the wall thickness.

1 11. A device as claimed in claim 1, wherein the at least one energy
2 transmission device comprises a plurality of longitudinally spaced energy
3 transmission devices.

1 12. A device as claimed in claim 1, wherein the at least one energy
2 transmission device comprises an electrode.

1 13. A surgical probe as claimed in claim 1, wherein outer structure
2 defines a perimeter, the at least one energy transmission device extends
3 around less than the entire perimeter, the at least one fluid lumen comprises
4 inlet and outlet lumens, and the inlet lumen is between a substantial portion of
5 at least one the energy transmission device and the outlet lumen.

1 14. A surgical probe as claimed in claim 13, wherein the outlet
2 lumen includes thermal insulation.

1 15. A soft tissue coagulation device, comprising:
2 a shaft defining a distal end and including an outer structure
3 formed from material that is substantially electrically nonconductive;

4 at least one energy transmission device supported on the outer
5 structure in spaced relation to the distal end of the shaft; and

6 at least one fluid lumen defined by the outer structure such that
7 a wall having a wall thickness is between the at least one fluid lumen and the
8 at least one energy transmission device, located such that a portion thereof is
9 aligned with the at least one energy transmission device, and including inner
10 and outer lumen surfaces defining a distance therebetween that is greater
11 than the wall thickness.

1 16. A device as claimed in claim 15, wherein the shaft is relatively
2 short.

1 17. A device as claimed in claim 15, wherein at least a portion of the
2 shaft is relatively stiff.

1 18. A device as claimed in claim 15, wherein the shaft includes a
2 malleable mandrel and the outer structure is mounted on the malleable
3 mandrel.

1 19. A device as claimed in claim 15, wherein the shaft includes a
2 tubular member defining a distal end and the outer structure extends distally
3 from the distal end of the tubular member.

1 20. A device as claimed in claim 15, wherein the shaft include a
2 proximal portion and a distal portion, the device further comprising:
3 a steering apparatus that deflects the distal portion relative to
4 the proximal portion.

1 21. A device as claimed in claim 15, wherein the shaft includes a
2 pre-bent portion.

1 22. A device as claimed in claim 15, wherein the at least one fluid
2 lumen comprises an inlet lumen and an outlet lumen.

1 23. A device as claimed in claim 22, wherein the inlet lumen and the
2 outlet lumen define respective distal ends, the device further comprising:
3 a non-conductive tip member defining a lumen that connects the
4 distal ends of the inlet lumen and outlet lumen.

1 24. A device as claimed in claim 15, wherein the at least one energy
2 transmission device comprises a plurality of longitudinally spaced energy
3 transmission devices.

1 25. A device as claimed in claim 15, wherein the at least one energy
2 transmission device comprises an electrode.

1 26. A surgical probe as claimed in claim 15, wherein outer structure
2 defines a perimeter, the at least one energy transmission device extends
3 around less than the entire perimeter, the at least one fluid lumen comprises
4 inlet and outlet lumens, and the inlet lumen is between a substantial portion of
5 at least one the energy transmission device and the outlet lumen.

1 27. A surgical probe as claimed in claim 26, wherein the outlet
2 lumen includes thermal insulation.

1 28. A surgical probe as claimed in claim 15, wherein the distance
2 between the inner and outer lumen surfaces is at least two times greater than
3 the wall thickness.

1 29. A method of coagulating soft tissue with an apparatus including
2 an elongate energy transmission device and an inner lumen, comprising the
3 steps of:

4 positioning the elongate energy transmission device in electrical
5 contact with tissue;

6 transmitting energy to the tissue with the energy transmission
7 device; and

8 passing fluid through the inner lumen such that heat is
9 transferred from the energy transmission device to the fluid.

1 30. A method as claimed in claim 29, wherein the step of positioning
2 the elongate energy transmission device comprises positioning a plurality of
3 spaced electrodes in electrical contact with tissue.

1 31. A method as claimed in claim 29, wherein the step of passing
2 fluid through the inner lumen comprises passing fluid through an inlet lumen
3 and an outlet lumen.